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April 23, 2012

Cypress Point ABC
338 – 7651 Minoru Blvd.
Richmond, BC V6Y 1Z3

Email: w2050@telus.net

Attention: Corinne Inglis

Dear Corinne:

RE: Cypress Point Unit 329/332 Building C – Structural Assessment
Strata Plan 2050 – 7651 Minoru Blvd., Richmond, BC RJC No.: VAN.037207.0017

As requested, Read Jones Christoffersen Ltd. (RJC) has undertaken a structural assessment of the existing structural framing of the roof deck assembly outside of units 329/332. This review is a follow-up to a structural load review conducted in 2008, by Read Jones Christoffersen Ltd. Our review concluded that extensive landscaping installed by one of the residents exceeded the design roof deck loads specified on the existing structural drawings. It was recommended the landscaping be removed immediately. Since this initial review in 2008 the majority of the landscaping on the roof top deck has been removed, as shown in photos 1 and 2 below.

The intent of this structural assessment was to review and evaluate the structural condition of the existing framing for any permanent structural damage due to the excessive landscaping load.

Photo 1: Roof Deck (October 2008)

Photo 2: Roof Deck (April 2012)

Our structural assessment outlined within this report is based, upon limited visual observations of the site and the structure, and review of the existing structural drawings (prepared by Fung and Associates, dated June 23, 1983).

1.0 FIELD INVESTIGATION

On Wednesday April 4, Jesse Pauls and Crystal Wegner of Read Jones Christoffersen were on-site to review the existing structural framing and review the revised loading on the roof top deck. A contractor was retained to cut an assess hole in the existing gypsum board ceiling within suite 229 to allow access to visually review the condition of the existing roof joists. The access hole was cut within the master bedroom beside the load bearing wall, as shown in Figure 1. This location corresponded to one of the regions previously loaded with landscaping.

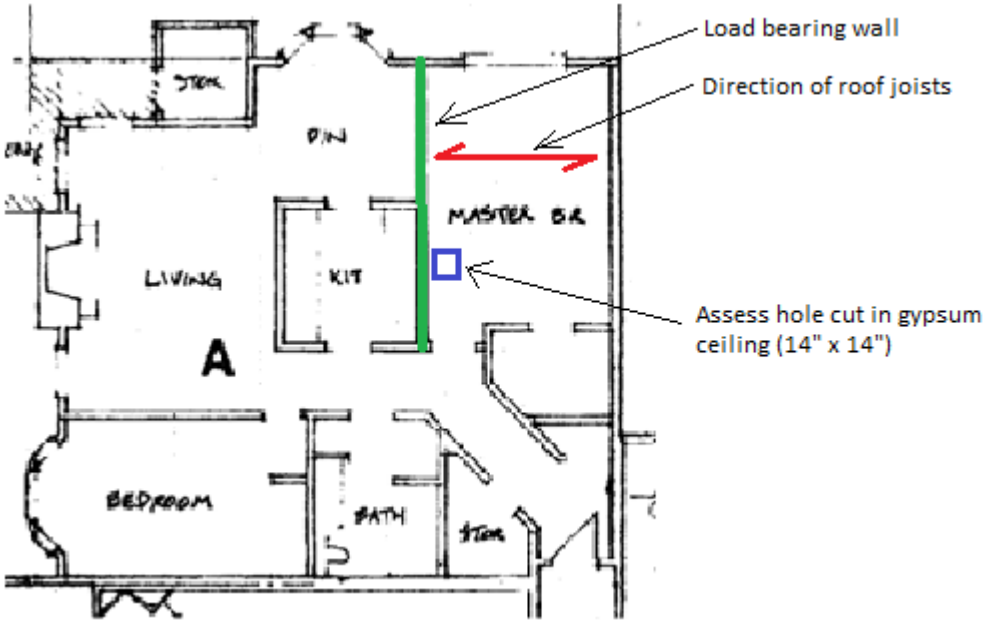

Figure 1: Suite 229 Layout – Location of access hole

2.0 VISUAL OBSERVATIONS

a) Roof top deck loading (unit 329/332) - A substantial amount of the landscaping on the roof deck has been removed; the remaining planters have been evenly spread out over the roof deck as recommended in the previous load review report. The current loading condition appears to be within the design loading of the roof deck.

b) Unit 229 ceiling - The entire gypsum board ceiling within unit 229 was reviewed for visual cracks, no cracks were observed during our review.

c) Roof Deck Structural Framing - A 14" x 14" hole was cut in the ceiling to allow access to view the structural framing. The ceiling assembly consisted of two layers of 5/8" gypsum board separated with 1/2" deep furring channels. The first layer of gypsum was fastened directly to 2"x10" roof joists (spaced at 16" o/c). The joist cavities were filled with batt insulation and cross vented with 2x strapping/sleepers. The strapping was overlaid with plywood sheathing

Conditions within the access hole appeared "dry" and both joists within the hole appeared to be the correct size. A horizontal split was observed through one of the joists above the bearing wall. The split was located at bearing end, near mid-height of the joist, and extended approximately 3ft along the joist (refer to photo 3). The split was observed to run through a knot in the wood.

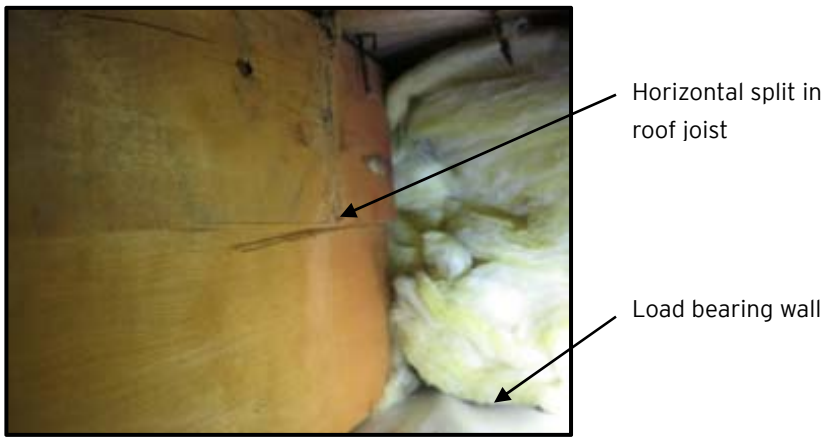

Photo 3: Split in Roof Joist

Both joists on either side of the opening were visually out of plumb and no blocking was apparent overtop of the bearing wall or throughout the joist span.

3.0 STRUCTURAL ASSESSMENT

Gypsum board ceilings attached directly to the underside of roof joists; as observed within unit 229, will generally crack if the roof joists sag substantially. Without apparent visual cracks in the gypsum board ceiling below the region of the previously heavily loaded roof deck, the roof joists appear to have not undergone permanent sagging and damage due to flexural bending is unlikely.

The observed split in the roof joist can be a result of several different issues. Such splits could represent a horizontal shear failure, a defect in roof joist at time of installation, and/or shrinkage cracking. Horizontal shear failures tend to occur when beams or joist are heavily loaded near their supports and the shear resistance of the joist is surpassed. The shear resistance of wood is highly variable, design codes account for this variability by applying resistance factors. Based on the current wood design provisions contained within the Canadian Wood Council CSA 086-09 *Engineering Design in Wood* we conservatively estimate the shear resistance of the 2x10 roof joists to be 13.2kN. For this shear resistance to be reached or exceeded the landscaping load applied on the roof joist would have needed to be extensive and would have likely caused visual cracking in the gypsum ceiling elsewhere.

The split in the wood could also represent an initial defect in the joist. Initial defects in the joist can over time propagate into large cracks/splits as the wood continues to dry.

Nevertheless; the cause of the existing split, the splits represents a significant reduction in the strength and stiffness of the joist and should be repaired.

4.0 RECOMMENDATIONS AND OPINION OF PROBABLE COSTS

Based on the two roof joists reviewed from the one ceiling opening a conclusive cause for the split in the roof joists cannot be determined. We would recommend removing a strip of the gypsum ceiling adjacent to the load bearing wall or alternatively removal of the roof assembly (membrane and plywood from the topside), to visually review the end condition of all the joists within this region. If other joists show signs of splits near the support a larger remedial scheme should be considered. However, if the remaining joists within this region appear okay, the one damaged joist should be repaired and the ceiling can be replaced. When the ceiling or roof is removed we would recommend installing rigid blocking between each joist over top of the load bearing wall to increase the stability of the roof assembly.

To repair the split joist we would recommend splicing a Microlam joist beside the existing joist and screwing the two joists together. The Microlam joist should extend a minimum of 24" past the end-point of the split to ensure adequate load transfer.

If a construction budget is needed for repair, RJC would recommend that a contractor be engaged to provide an estimate to complete the work.

We trust the information contained within this summary report satisfies your immediate requirements. Should you have any comments, questions or concerns, please contact the undersigned.

Yours truly,

Read Jones Christoffersen Ltd.

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